The Claims

1. A method of improving electrical conductivity of metals, metal alloys and metal oxides comprising:

a) providing a substrate having an electrically insulating native oxide layer on a surface thereof, said substrate being selected from the group consisting of Group IVA, Group VA and Group VIA metals, aluminum, manganese, nickel, copper and stainless steel; and

b) utilizing a low temperature arc vapor deposition process to deposit on said native oxide layer a metal selected from the group consisting of Group IA and Group VIIIA metals;

c) whereby said native oxide layer is changed from being electrically insulating to being more electrically conductive.

2. A method according to claim 1, including sequentially depositing and intermixing until a predetermined mixing depth is obtained.

3. A method according to claim 1, further including applying a coating on said native oxide layer whereby said substrate is useable as an electrode in a capacitor.

4. A method of improving electrical conductivity of metals, metal alloys and metal oxides comprising:

a) providing a substrate having an electrically insulating native oxide layer on a surface thereof, said substrate being of a material operative for use as an electrode in a capacitor; and

b) utilizing a low temperature arc vapor deposition process to deposit on said substrate surface a metal selected from the group consisting of Group IA and Group VIIIA metals;

c) whereby said native oxide layer is changed from being electrically insulating to being more electrically conductive.

5. A method according to claim 4, further including applying a coating of capacitor electrode material on said native oxide layer.

6. A substrate of improved electrical conductivity wherein said substrate is selected from the group consisting of Group IVA, Group VA and Group VIA metals, aluminum, manganese, nickel, copper and stainless steel and said substrate having a native oxide layer on a surface thereof, and wherein said sustrate surface has deposited thereon metal selected from the group consisting of Group IA and Group VIIIA metals for increasing the electrical conductivity of said native oxide layer.

7. A substrate according to claim 6 further including a coating on said native substrate surface of material rendering said substrate useable as an electrode in a capacitor.